

**Listing of Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (Currently Amended) A method of analysing tachometer and vibration response data from an apparatus having one or more rotary components, the method comprising the steps of:
  - providing vibration response data and corresponding tachometer data from the apparatus for a period over which a rotary component of the apparatus varies in rotational speed, the tachometer data being for that component;
  - repeatedly performing at intervals throughout the period the sub-steps of:
    - determining a forcing frequency of the component from the tachometer data and a corresponding vibration response frequency of the apparatus from the vibration response data,
    - comparing the forcing and vibration response frequencies to determine the relative phase difference between the frequencies, and
    - determining the corresponding amplitude of the vibration response from the vibration response data; and
    - plotting the relative phase differences and vibration amplitudes on a polar diagram, whereby the plot trajectory is characteristic of the behaviour of the apparatus over the period; and
    - comparing the plot trajectory with a reference trajectory for a period in which the apparatus experiences the same variation in rotational speed.

2. (Cancelled).
3. (Currently Amended) A method according to claim 1 ~~or 2~~, wherein the vibration response data and tachometer data are acquired independently of each other.
4. (Currently Amended) A method according to ~~any one of the previous claims~~ claim 1, wherein the apparatus is a gas turbine engine.
5. (Original) A method according to claim 4, wherein the rotary component is a turbine drive shaft of the engine.
6. (Currently Amended) A method according to ~~any one of the previous claims~~ claim 1, wherein the tachometer data does not provide the absolute rotary position of the component.
7. (Currently Amended) A method according to ~~any one of the previous claims~~ claim 1, wherein the forcing and vibration response frequencies are compared in the time domain in order to determine the relative phase difference between the frequencies.
8. (Currently Amended) A computer system operatively configured to perform the method of ~~any one of the claims 1 to 7~~ claim 1.
9. (Currently Amended) Computer readable media carrying computer code for performing the method of ~~any one of the claims 1 to 7~~ claim 1.
10. (Currently Amended) A computer program for performing the method of ~~any one of the claims 1 to 7~~ claim 1.